

WHAT IS CLAIMED IS:

1. A method of decoding a channel of data, comprising the steps of:
sampling a vector of data from the channel of data;
processing said vector of data to output a final code word of bits; and
generating a final reliability vector associated with said final code word
such that each bit of said final code word of bits has a corresponding reliability value in
said final reliability vector, said final reliability vector generated by:
determining said corresponding reliability value for one or more
bit positions of said final code word of bits in accordance with a difference of
distance metrics; and
approximating said corresponding reliability value for one or more
bit positions of said final code word of bits in accordance with a numerical
approximation.
2. The method of Claim 1, wherein said vector of data in the step of
sampling is a linear block code of information bits.
3. The method of Claim 2, wherein said block code is compatible with one or
more block code technologies including Extended Hamming codes, Golay codes, and
BCH codes.
4. The method of Claim 1, wherein the step of processing is performed
iteratively on a plurality of intermediately generated code words to arrive at said final
code word.
5. The method of Claim 4, wherein there are three of said plurality of
intermediately generated code words.

6. The method of Claim 4, wherein corresponding intermediate reliability vectors of reliability values are generated in the step of iteratively processing for said plurality of intermediately generated code words.

7. The method of Claim 4, wherein the step of iteratively processing further comprises the step of subtracting soft input information from said difference of distance metrics to determine said corresponding reliability value for said one or more bit positions.

8. The method of Claim 1, wherein said difference of distance metrics in the step of determining is utilized to determine said reliability values for a number of bit positions which is less than the total number of bit positions of said final code word.

9. The method of Claim 1, wherein said difference of distance metrics in the step of determining is utilized to determine said reliability values for a number of bit positions which is one more than the minimum distance associated with a type of block code of said final code word.

10. The method of Claim 1, wherein the step of determining further comprises the step of subtracting soft input information from said difference of distance metrics to determine said corresponding reliability value for said one or more bit positions.

11. The method of Claim 1, wherein when said corresponding reliability value for select ones of said one or more bit positions are determined according to said difference of distance metrics in the step of determining, said corresponding reliability values for the remaining bits of said final code word of bits are approximated according to the step of approximating.

12. The method of Claim 1, wherein the step of processing is performed iteratively on a plurality of intermediately generated code words to arrive at said final code word, such that one of said plurality of intermediately generated code words is determined to have a minimum distance metric associated therewith, and which said
5 minimum distance metric defines said associated intermediately generated code word as said final code word.

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